

PATHWAYS

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No. 3

ON BOARD R.A. 186

To give Class IV A the experience of an air journey and to make the lesson 'Our Airways' a success, I tried this activity.

The whole class was divided into four groups. One group consisted of airhostesses, the other group consisted of security staff, pilot and co-pilot. The third group were the hijackers. The fourth group became the passengers.

Boarding cards and baggage cards were made by some of the children. The names given to the airport and airlines were Ramjas Airport and Ramjas Airlines. Posters depicting the Ramjas Airport and stating "No Entry Without Tickets" were put up in front of classroom. Boarding passes were distributed in advance.

The passengers reported at the Ramjas airport and checked in their luggage. A thorough security check-up was done by the security staff before they were allowed to board flight RA 186. Immediately on boarding the plane an airhostess welcomed the passengers with a 'Namaskar'. The pilot and co-pilot had taken their places in the cockpit.

An airhostess announced, 'Welcome to Ramjas Airlines flight 186. We are about to take off. Please fasten your seat belts. We wish you a happy journey.' The plane took off with the children, making the appropriate sound,

The flight was passing over Jaipur. Another air-hostess announced, "We are passing over the famous city of Jaipur, which is also called the Pink City. I am sure the cabin crew are looking after your comfort. We will reach Bombay on time. Thank you for flying with us".

The snacks were served. The passengers had not finished eating when the voice came. "Nobody will get up from their seats". The startled passengers looked up. To their horror the hijackers were standing and trying to enter the cockpit. They ordered the pilot to fly the plane to some other place. The security staff acted swiftly and overpowered the hijackers successfully. Everybody heaved a sigh of relief.

Soon after came another announcement: "We will shortly be landing at Bombay. The cabin lights will be dimmed now. Passengers are requested to remain seated and fasten their seat belts. Overhead reading lamps may be used if required. In case you need any help on arrival please contact our commercial staff. Thank you".

Soon the aircraft lost height and smoothly touched down on the runway and started rolling towards the parking bay.

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MATHEMATICS IN THE SHANKRANTHI PROJECT

by Raghobabu

I. Expenses

"During the festival your mother must have prepared sweets. What material is required to prepare sweets?" Rama asked the children in her maths class.

Vijaya informed, "One kilogram of rice; a quarter kilogram of jaggery and half a kilogram of oil etc."

"How much did you spend to get this material?"

The children listed the expenses:

One kg rice	=	Rs. 2.00
Quarter kg jaggery	=	Rs. 2.00
Half kg oil	=	Rs. 12.00
Total	=	Rs. 16.00

In Vijaya's house they spent Rs 16/- towards preparing milk porridge. But they prepared 2 or 3 more varieties too. Every child listed out what sweets their mothers had prepared, what materials they used and how much they spent on that material.

II. Patterns

"How many dots are required for a peacock-rangoli?" Rama asked the girls. And she continued, "How much area it will occupy? Did you draw it in two feet area or in four feet area?"

Rama divided and marked four feet squares in the front yard of the school. Children decorated the front yard with beautiful rangoli patterns. They decorated them with coloured powders too!

How many dots each design required; how many squares will come in a design; the

shapes of the designs; the area each design occupied; the quantity of coloured powder they applied etc., all these things they learned practically.

Observe the regular mathematics textbooks: how many theories and definitions the writers of textbooks pour out for the primary level children. In class 3 the textbook imposes hard Sanskritised technical terms on 8-9 year-old tender minds, such as:

Sankyamana; Sangnamana; Sankalan; Vyavakalan; Ekankasankhya; Viyogakam; Viyogyam; Sesham; Natural value; Place value . . .

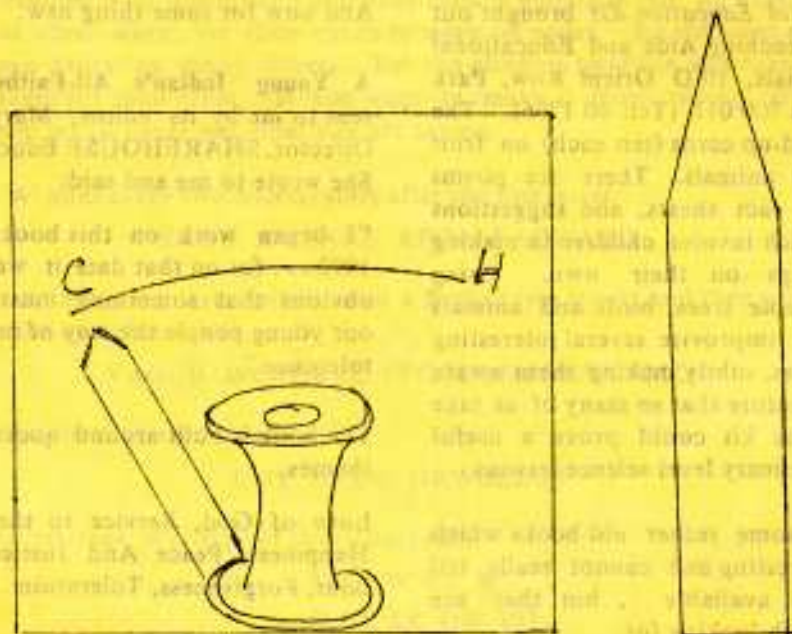
Is it necessary to impose so many of these unknown, indigestible technical terms in the primary stages? Isn't there any other way to prepare text books for primary classes in simple language, without any complicated terms? Isn't there any way to create interest in mathematics? Unless the teacher is aware of children's environment, it is really difficult to teach and make the children understand what is being taught!

No maths chapter takes the children into the realm of their own lifestyles and environment. Very dull, boring and uninteresting maths . . .! Moreover it creates fear among the children! To get through examinations children have to memorise the theorems and the terms. The maths exam is the Waterloo of many a child. As many as 70% of students fail in maths, and then in the English paper.

But Rama makes maths easy. She has taken it into their experiences, taken it into their homes, into their routine activities and provided them an opportunity to learn mathematics very simply, without memorising the definitions and the terms. Maths is also a part of their daily activities like language! Realising this is really a great experience!

To be continued in the next issue

MAKE A SOLID THERMOMETER



Most thermometers the children have seen use a liquid to measure temperature. But here is a simple one based on the fact that solids too expand and contract when heated and cooled. Try it out yourself before asking the children to do it.

Materials Needed: Cardboard, a foil and paper chocolate wrapper, pencil, wooden spool (from the tailor ?), and cello tape.

Flatten out the chocolate wrapper well. On the paper side draw and cut out a pointer the size of the one shown in the figure. Tape the straight edge of the pointer to the underside of the spool.

Place the spool close to one edge of the cardboard, aim the pointer to the middle of the cardboard and tape the spool firmly in place.

Place the thermometer in a really cold place—perhaps the freezer compartment of a refrigerator. Leave it for a few minutes and mark the location of the pointer. This point C is the cold end of your temperature scale.

Next take your thermometer into the garden and leave it in a bright sunny place to find the hot end of the scale H.

Then try to locate places which have temperatures in between these two extremes.

Why does this thermometer work? The metal foil side of the wrapper expands and contracts more than the paper side. In a cold place it gets shorter than the paper side. In a cold place it gets shorter than the paper side and pulls the pointer one way. In a hot place, the foil is longer than the paper and pulls the pointer in the opposite way.

HAVE YOU HEARD ABOUT....

* The *Environmental Education Kit* brought out by New Wave Teaching Aids and Educational Resource Materials, 10 D Orient Row, Park Circus, Calcutta 700 011 (Tel: 40 1706). The kit contains stand-up cards (ten each) on fruit trees, birds and animals. There are poems and quotations, fact sheets, and suggestions for activities which involve children in making and doing things on their own. Using commonly available trees, birds and animals the teacher can improvise several interesting hours for the class, subtly making them aware of the world of nature that so many of us take for granted. The kit could prove a useful supplement to primary level science lessons.

I came across some rather old books which looked very interesting and cannot really tell if they are still available ... but they are but they are worth looking for.

* Chintoo Paint Books brought out by Rastogi Publications, Shivaji Road, Meerut 250 002, has a book titled *INSECTS*. Each page has a large line drawing of a common insect. Useful as a colouring exercise and also to make children aware of a part of the animal world which they tend to ignore. The chapter "Living Things" in our science texts usually means only cats, dogs, cows, horses etc !

* Sterling Publishers, 3640 Mori Gate, Delhi 110 006 seem to have brought out a set of twenty books, each featuring folk-tales of the different states of India. I picked up the one on Folk-Tales of Tamil Nadu and found 34 delightful, short stories, some of which could form the basis of interesting language work for any imaginative teacher.

And now for some thing new:

A *Young Indian's All-Faiths Thought Book* sent to me by its editor, Mary Ann Das Gupta, Director, SHAREHOUSE Education Consultants. She wrote to me and said:

"I began work on this book on 6th December 1992 ... for on that date it was made *urgently* obvious that something must be done to show our young people the way of mutual respect and tolerance."

The book is built around quotations on selected themes:

Love of God, Service to the Poor and Needy, Happiness, Peace And Justice, Love of Neighbour, Forgiveness, Toleration.....

It contains brief introductions to seven religions practised in our country and has been illustrated by the noted artist, Shri Ramnanda Bandhopadhyaya, an exponent of the Bengal School of Art and Curator of the Art Gallery at the Ramakrishna Mission Institute of Culture in Calcutta.

The book is designed to be used by individuals or in discussion groups; in value education/moral science classes.

Price: Rs. 10/-, add Rs 3/- for packing and mailing. Send an M.O. or Demand Draft to E. L. D., 3, R. N. Mukherjee Road, Calcutta 700 001. (FAX 91-33-286604—if you want more information.)

(Continued on page 15)

"My mother wanted me to have good education.
So she kept me out of school."

—Mark Twain

HAVE FUN WITH CODES

When you've finished your lesson early and your class is getting bored, or when they are through with their tests or class work, set their minds to work on codes. Six different examples are given below, but you can make up many others. Let the children have fun and exercise their minds as well make up messages for each other. If you want to make it more taxing, give them a coded message and let them try to figure out what you are saying.

1. Insert an 'A' after every two letters: start after the first letter

Y A O U A W E A R E A F O A L L A O W A E D

2. Insert an A after the first letter; then a B after two letters and then after every letter one further in the alphabet—ie C . . . D . . .

Y A O U B W C E D R E E F F G O H L I L J O K W L E M D

3. Reverse the letters of each word

U O Y E R E W D E W O L L O F

4. Write your message in groups of two letters each

Y O U W E R E
F O L L O W E D

5. Deduct one letter from each letter eg. Y minus 1 equals X etc.

X N T V D Q D E N K K N V D C

6. Try a slide rule for codes. It works like this. Each message begins with a cover word whose first letter shows which code is in use for the message. If it is a small letter h, for example, the rule is adjusted to that and the message reads like this:

lKgn QK Qrn NbBuN. That means : come to the river!



Invent your own codes : use colours and shapes as well as dots, clock faces, winking with the eyelids and many other devices.

HAVE FUN ON TEACHING MATHS

Six months ago, I was teaching some young children. One pleasant evening, my son Sridhar, seven years old, was in a sober mood. I asked him "Seven plus eight is how much?"

Sridhar : Fifteen

Myself : How did you calculate it?

Sridhar : Fifteen, that's all.

Myself : In what way did you add 7 and 8?

Sridhar : I don't know.

Myself : I do it in this way,

$$7+8=7+(3+5)=(7+3)+5=10+5=15$$

In what way did you do it?

Sridhar : No, not in that way.

$$7+8=7+(7+1)=(7+7)+1=14+1=15$$

Then I thought, perhaps my method is a traditional one. Sridhar did it in another way and also a better way.

After some days...

Myself : Could you tell me how much nineteen 3's are?

Sridhar : Oh such a big one! I don't know. I know tables upto 15 only.

Myself : No... No... though you don't know the 19 table you can tell 19 3's... see you don't know nineteen 3's but try twenty 3's.

Sridhar : 60, that is so easy.

Myself : twenty-one 3's are how much?

Sridhar : 63, (60+3)

Myself : twenty-two 3's are?

Sridhar : 66, (63+3)

Myself : twenty-three 3's are?

Sridhar : 69, (66+3)

Myself : twenty-two 3's are?

Sridhar : 66, (69-3)

Myself : twenty-one 3's are?

Sridhar : 63 (66-3)

Myself : twenty 3's are?

Sridhar : 60 (63-3)

Myself : nineteen 3's are?

Sridhar :57 (60-3) (glee on his face)

Myself : eighteen 3's are?

Sridhar : 54 (57-3)

Myself : seventeen 3's are?

Sridhar : 51, (54-3)

By then he was just laughing with delight. I stopped. Later we went on discussing many other things.

I had tried many times to teach him the concepts of multiplication. But he didn't get them. He was able to tell the answers, but he didn't know the concepts. One day, accidentally, he peeled a banana into three vertical parts, peeling with his forefinger vertically. A discussion started.

Myself : How many pieces are there?

Sridhar : Three.

Myself : If we peel two bananas in the same way, how many pieces will be there?

Sridhar : Six.

Myself : If three bananas are peeled?

Sridhar : Nine pieces.

Myself : From 4 bananas we will get

Sridhar : Twelve pieces.

I went on asking him many question. He replied quite correctly. Sure, he understood multiplication. But on the very next day

Myself : How many 10 paise coins are there in a rupee.

Sridhar : Why do you talk about maths always?

Always Maths, maths, maths
(feeling fed-up).

Myself : ? ? ? ?

Later I thought, "I am interested in Maths, not him. My way of teaching may be innovative, but he is not ready to learn at my pace. Learning maths is not his only interest. Why should I thrust my interest on him?" And I stopped the unwanted teaching. Now and then he asks some questions on the earth, moon, sun, seas and also on maths. His learning process has become so powerful. He is also teaching Maths to a rd grade girl and his illiterate mother whenever they ask him!

Chandra

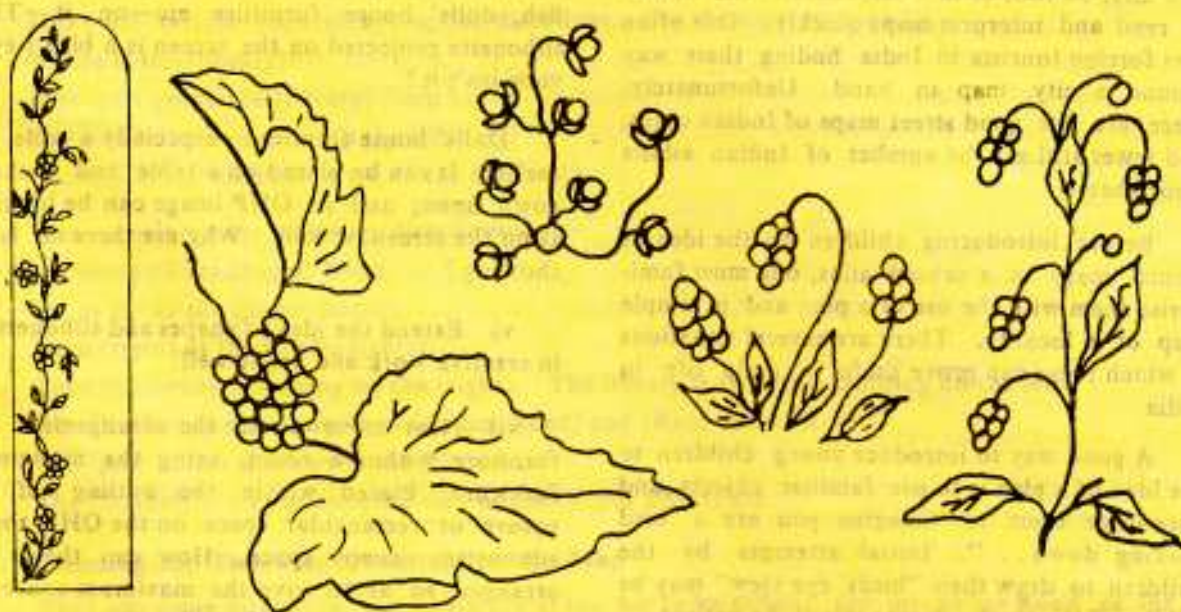
15-13, A.C.E., Brindavan
Nellore-524 001

COLOURFUL DOT ART

by Iris Joseph

The more personalised a card, letter or book mark is, the more warmly it is received. With the "Three P's", paper, punch and paste you can decorate these and many other items with coloured circles punched out from construction paper, magazines, brochures and cards.

To decorate stationery, book marks, gift tags, place cards, stamp folders you will need a paper punch, white glue, toothpicks, a 3-inch square of waxed paper, face tissue, tweezers, fine felt pen and small tins.



Punch a large assortment of dots in various colours. For variation, cut dots in half. Arrange the dots by colours in tins. Gift tags may be made from a 4×5-inch sheet folded in two. Place cards and book marks will require heavier paper. On card, book mark or other project lightly draw with pencil the outline of a design. Some samples are given here. Use felt pens for the stems and foliage.

Place a dot of glue on a piece of waxed paper anchored with a weight. Pick up dots with tweezers and apply glue to back of dot with a toothpick. If working with a circle of dots, position centre dot first and press down with a piece of tissue to blot off excess glue. You will be able to create a variety of designs and enjoy the circle game "here a dot, there a dot,"

[Mrs. Joseph has for many years, enjoyed working on craft projects with young children. She is adept at various handicrafts including needlework, paper craft, the making of paper flowers.]

(Reprinted from the August 1983 issue of Pathways)

TEACHING CHILDREN TO THINK AND DRAW PLANS

To live today in the modern world, certainly in the western hemisphere, the skill of map reading is essential for survival. One must be able to decipher the map of the London Underground to find out which railway line to take; the same is true of the Washington Metro. Likewise to be able to find one's way around a new city, on foot or in a car, requires the ability to read and interpret maps quickly. One often sees foreign tourists in India finding their way around a city, map in hand. Unfortunately, there are few good street maps of Indian cities, and fewer still are the number of Indian adults using them.

Before introducing children to the idea of formal maps in a school atlas, one must familiarise them with the use of a plan and a simple map of a locality. There are several situations in which these can prove useful in daily life in India.

A good way to introduce young children to the idea of a plan is to use familiar objects and encourage them to "imagine you are a bird looking down...". Initial attempts by the children to draw their "birds' eye view" may be wildly off the mark. Never mind! Be patient... encourage them to draw such plans as often as possible... and praise their efforts whenever possible. Do not penalise or ridicule the child for a map or plan that doesn't look like yours!

Here are some suggestions for 'plans' which young children can work on:

i) Each child looks down on his/her own hand so many times a day. They could place their hands flat on a piece of paper and draw around them to get their plans. Here there is no problem of scale... or of drawing freehand.

ii) Look for other objects which can be drawn in a similar way—pencil, small ruler, sharpener, eraser, jam jar etc.

iii) Let children practice drawing the plan of larger objects like a table or a string cot (*charpoy*) which they can look down upon quite easily.

iv) Use an overhead projector for a small quiz: What Do You Think It Is? Place small objects like cutlery, fruit, toys—aeroplanes, fish, dolls' house furniture etc—on it. The silhouette projected on the screen is a bird's-eye view isn't it?

Dolls' house furniture—especially a table, is useful. It can be placed on a table and looked down upon; and its OHP image can be looked at on the screen or wall. Why are there no legs showing?

v) Extend the idea of shapes and silhouettes in creative work and art as well.

vi) Next move on to the arrangement of furniture within a room, using the miniature furniture. Placed within the outling of a square or rectangular space on the OHP, their silhouettes occupy space. How can they be arranged so as to give the maximum space in the centre?

Children can actually move the furniture around themselves and see the effect on the OHP, 'plan'.

vii) Create problem-solving situations: If the family have to put in an extra bed for a guest, where will it go?

viii) If possible, arrange to take your class up to the top of a multi-storeyed building where they can look down on several objects. If this is not possible, perhaps they can look down on scaled down models of houses, buildings etc.

(Continued on page 16)

USING MAPS & PLANS AS A LANGUAGE TEACHING AID

Meera Govil

There is a wide variety of uses to which maps, such as street plans, can be put to provide meaningful practice in the classroom at different levels of linguistic attainment. To carry out these exercises provide children with copies of simplified street plans or project one on a screen using an overhead projector. Create your own imaginary plan of an area, if required.

A. Asking for and Giving Directions

1. There are various ways of asking for directions. See the map on page 13.

Where is the (library)?

How do I get to the (library) from here?

Can you tell me the way to the (library)?

Could you tell me how to get to the (library)?

Some possible ways of giving directions are:—

Go along (Rani Jhansi) Road,

Go as far as the (Super Bazar),

Turn (right) at the (traffic lights),

Take the (second) turning on the (right). The library is the third building on the left.

The (Bank) is on the corner of (Ansari Road) and (Rani Jhansi Road).

The (post office) is opposite the (library),

The (School) is on the opposite side of the (Super Bazar) etc.

2. Listening and Following Directions on the Map

Read out some directions, e.g. You are at the Air India Office. Go up Akbar Road as far as Park Street. Turn left and continue along Park Street. Turn right and go up Ansari Road. Turn left into Rani Jhansi Road and then take the next turning to the left. Where are you?

3. Oral Practice

- a) Student 1 tells student 2 how to get from A to B. Encourage the use of sequencing devices, e.g. First then after that

- b) Student 1 tells student 2 how to get from A to B giving alternative routes.

S. 1 : Excuse me. How do I get to the from here?

S. 2 : Hmmm, let me see. Well, first you Then (etc)

S. 1 : Thanks very much

The mini-dialogue can be extended, for example: if Student 1 asks how long it will take or repeats Student 2's direction to make sure he has got them right.

- c) If you want to get the students to practice the simple past tense, Student 1 could tell Student 2 how he got from A to B, e.g. First of all I went along .. then I turned left....

B. Problem-Solving Exercises

- You have to go from the (Primary School) to the hospital by car. You know that there is always a traffic jam where Rani Jhansi Road crosses Akbar Road, which route would you take?
- You want to get from the (Secondary School) to the cinema hall without passing the Post Office (where your father works!) which route would you take?
- If you went from the (hospital) to the (bus station) via Akbar Road and Rani Jhansi Road, what places would you pass on the way?
- Which is the quickest route from the (Primary school) to the (secondary school)?

C. Games

- Show the map on the overhead projector or on the blackboard with about 15 places marked. Let the students study this for 3 minutes. Show another version of the same map without the places marked. Ask the pupils to write down as many locations as they can remember. Or divide the class into two teams and locate the places on the way, taking suggestions from each team in turn.
- 'Five Questions'—Using the overhead projector, locate some buildings on the map without saying what they are. Divide the class into two teams. Tell team A the names of half of the places and team B the names of the others. Each team then takes it in turn to ask questions to try to find out what the buildings are.

e.g. Do people work there?

It is a public building?

Can you buy things there? etc.

- Interaction Game: Write a list of places to be located on the blackboard. Give each student a card like this:

Find out the location of:

1. The Post Office

2. The Super Market

If anyone asks you for the full information, tell him:

1. The University is in Chhatra Marg

2. The Bus Station is between Rani Jhansi Road and Shanker Road

The students then move around the class, asking questions until they find the relevant information. At the same time, of course, they give information when the right question is asked (e.g. Do you know where the University is?)

- Jigsaw: Draw on the blackboard or show on the overhead projector a map with about 10 places marked. No indication should be given what these places are. Each student, however, has a card with some information about those different places.

(Continued on page 13)

Self Development & Human Relations in The Classroom

Every teacher is a Manager—a manager of children and their learning in a given situation. Many skills and attitudes are necessary to be an effective manager. In one of the articles in a journal for professional managers the following have been recommended. These are modified slightly to suit those of us in the teaching profession.

1. A Pleasant Personality

People like working for managers with a pleasant personality, and accept his instructions and authority, more readily. Watch your personality in the class room! Don't let your personal problems show in dealing with the children.

2. Be Considerate

Being considerate, and courteous towards your students does pay. Empathize with them.

3. Be Consistent

The teacher whose course is steady, whose actions are predictable and who is consistent in his actions will win confidence and cooperation from pupils.

4. Listen Thoughtfully

There is no surer way to discourage creative thinking by a pupil than to ridicule a suggestion he makes. Never dominate a discussion or conversation, but give courteous hearing to your students.

5. Involve them in Decision Making

You can build up your students' self-esteem if you occasionally ask for their counsel and help. Besides, when they feel that they have had a say in a decision, they are more likely to go along with it.

6. "Disguise"

Disguising your orders as "requests" gets better results than issuing them as "Commands".

Today's student wants and deserves more consideration than "I tell you. You do it". According to behavioural scientists, most students will rate a teacher high and will cooperate more willingly, if he or she gives orders pleasantly.

7. Delegate

Look for chances to give students small jobs. It develops self confidence in them and leaves you more time for managing the teaching-learning process.

8. Show Faith and High Expectations

Pupils tend to perform according to what is expected of them. If they know you have the confidence in them to expect a first-rate job, that's what they will usually try to give you. Conversely if you show lack of confidence and trust in them, they will try to live up to your expectations by poor performance.

9. Let Your Students Know Where They Stand

Make an objective evaluation of their performance and not of their traits and disposition. Further to get full value from such a system, you must discuss ratings with each person individually so that he can bolster his weak points, clear up misunderstandings and recognize his particular strengths and talents. In case of poor performance, it is better to discuss this with the student than to criticize him in his absence.

10. Criticize in Private and Praise in Public

If you must criticize a student, do it in private on a person to person basis. Reprimands in the presence of others will undermine morale and self-confidence. Praising people (when they deserve it) in front of others tends to raise their morale, increase prestige and strengthen self-confidence.

(Reprinted from the August 1983 issue of Pathways)

GOING TO SEED—A Project for Primary Classes

Going to seed can be better than it sounds, especially in a science classroom where teachers introduce students to the scientific and nutritional facts about seeds.

Think of seeds as packages containing everything needed to produce a plant. When enough water and an appropriate temperature are provided, germination takes place. In the few days before the roots are formed, the baby plant lives on the food stored in the seed.

This stored food is not only essential to the plant; it provides food for human beings and animals as well. Seeds have always been and still are a major part of the world's diet. Grains like wheat and rice, barley, rye, corn and oats, technically called fruits, are cooked whole, ground into flour, sprouted or eaten raw. Peas, beans and lentils are used all over the world and form a major source of protein intake for vegetarians. Some seeds are eaten together with the fruit in which they form—cucumber, chilly, tomato, bitter gourd and many other gourds. Some seeds are eaten as seeds—sunflower, almonds, walnuts, sesame and coconut. Many seeds are a source of cooking oil—mustard, sesame, coconut and sunflower.

Some seeds which we do not eat are found in edible fruit like mango, citrus fruits, apples, pears, water melons. Other inedible seeds are those found on trees like the gulmohar, the laburnum and all kinds of annual flowers grown in the garden.

The above brief background should be the subject of a free and open-ended discussion in class, at the start of this project. Encourage children to provide the names of the various kinds of seeds. This will provide the basis for a classification exercise when they bring in actual samples.

You might like to take a walk in the school garden or a nearby park at the end of summer

to look for different kinds of seeds. Do a preliminary survey on your own first and enlist the help of the biology teacher. Look for unusually shaped seeds; look for winged seeds or those that float in the air (different kinds of seed dispersal); look for seeds of different colours and sizes; look for ripe dry fruit which are about to burst and scatter their seed. Find out about the uses of some of these seeds. Have they any medicinal value? This survey will help you answer questions as they arise and to point out things that the children have overlooked.

On the day of your field trip, children must come well prepared in order to get the maximum benefit from the outing. Plan in advance, with them, what items they will need—small cardboard boxes or polybags to store their collections, pencils and rough-work notebooks to write down where they found the specimens and to make quick sketches of unusual plants, flowers or seeds, small numbered envelopes might be handy as all names may not be known (finding out from appropriate sources is an important skill), water (it may be a thirsty trip!), a little antiseptic cream for cuts and insect bites (if you are going out of the school), food (if you are planning to be away for a long time).

Back in the classroom, sort and classify your collection in a variety of ways.

Make a separate collection of seeds from the home and kitchen. Apart from classification exercises, try to sprout some grains (wheat), lentils/legumes (*chana*, *moong*, *rajma*). This works well in warm moist weather. Maintain a record of the changes observed in the seeds as they sprout and grow.

When the sprouts have reached a reasonable size, it can be time for a cooking demonstration. If the children are too young to handle

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(Continued from page 10)

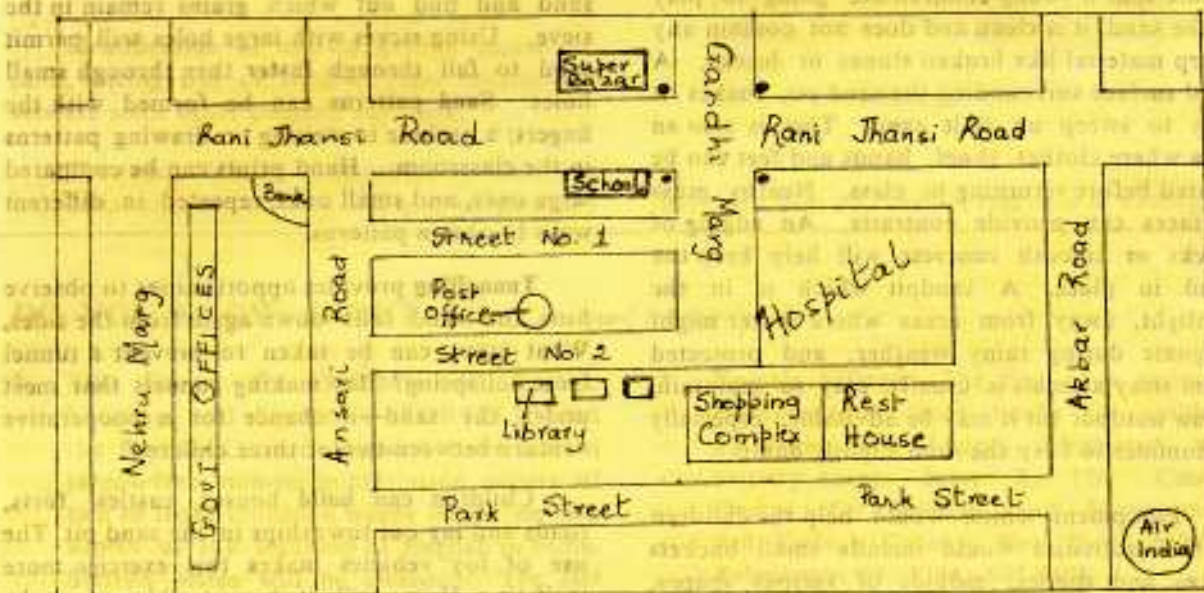
Thus when you ask: "What is the building?" (pointing to one of the places on the map), one of the students will be able to tell you and the class that it is the Museum because he has on his card, "The building on the corner of Church Lane and Amrita Shergil Marg is the Museum". Other students will be able to say on which day it is open, how long it is open for, perhaps when it was built, its main exhibits. In this way, a 'profile' of each place is built up.

D. Group Activities

- Divide the class into 5 groups. Each group refers to their map to decide on which 3 places to visit and which route they will follow. Each group has the same starting point on the map. When the class is reformed, the groups question one another about the places they visited and the route they took.
- Divide the class into groups. Each group has a map with 'sites' marked. A list of places to be located is written on the blackboard. Each group decides which places to locate in the given sites. The class is then reformed and the groups exchange information and give their reasons for locating the places where they did.

E. Written Work

Draw a sketch map of where you live. Then write a letter to a friend inviting him to a party, telling him how to get to your house, using the sketch map. Your map should show your house and any useful land marks to help him find your house.



[Meera Govil, now living in Australia, taught English at Springdales School, Delhi and was in charge of their Teachers Centre. This article is based on material developed by her for a successful English Language Workshop for teachers.]

PLAYING WITH SAND

Play is the young child's way of coming to terms with his world. During his play he will explore and discover much about his environment, express his feelings—of pleasure, fulfilment, unhappiness and frustration, satisfy his innate curiosity and in the process learn a great deal. Access to a wide variety of natural materials, among them sand and water, help in this process.

Sand is one of the basic materials which can help a child develop many concepts. It will provide him with opportunities to observe and recognise similarities and differences in shape, colour, texture. Playing with sand and suitable equipment helps improve muscular coordination. Many experiences arise which form the basis of early learning in mathematics and science.

Many of our schools have sand pits which while used by senior students for games, are rarely visited by juniors. It is important to ensure that if young children are going to play in the sand, it is clean and does not contain any sharp material like broken stones or bricks. A hard surface surrounding the sand pit, makes it easy to sweep up spilt sand. This is also an area where clothes, shoes, hands and feet can be dusted before returning to class. Nearby grass surfaces can provide contrasts. An edging of bricks or smooth concrete will help keep the sand in place. A sandpit which is in the sunlight, away from areas where water might stagnate during rainy weather, and protected from stray animals is usually easy to maintain. In an outdoor pit it may be advisable, especially in summer to keep the sand slightly damp.

Equipment which would help the children in their activities would include small buckets, rakes and spades, moulds of various shapes, empty tins and containers of different sizes and shapes, funnels, sieves, bottle tops, pebbles, twigs, small toys cars, trucks, paper and plastic bags, cardboard boxes and so on. For older

children a pulley with a strong rope would help them gain first hand experiences about height and weight. Large magnifying glasses might be used to examine the sand.

Early exploration by young children at the sand pit will include experiences like feeling the sand, comparing it with other surfaces, observing its properties. It can run through the fingers when it is dry but will stick to the hands if wet. When wet it can be moulded into different shapes; it can be dug up and piled up. Dry sand can be poured from one container into another. It will pass through funnels. Scoops and spades can be used to smooth down and level the sand, to build it into shapes. Sand falling on different surfaces makes a variety of sounds. Are the sounds made by wet and dry sand the same? Use a small container like an ice-cream cup, fill it with moist sand and invert repeatedly to form patterns.

Older children can use sieves to sift the sand and find out which grains remain in the sieve. Using sieves with large holes will permit sand to fall through faster than through small holes. Sand patterns can be formed with the fingers; a prelude to writing or drawing patterns in the classroom. Hand prints can be compared large ones, and small ones, repeated in different ways to obtain patterns.

Tunnelling provides opportunities to observe how the sand falls down again from the sides. What steps can be taken to prevent a tunnel from collapsing? Try making tunnels that meet under the sand—a chance for a cooperative venture between two or three children?

Children can build houses, castles, forts, roads and lay out townships in the sand pit. The use of toy vehicles makes this exercise more realistic. How will it be possible to make sloping roads?

The use of different size containers can lead to exercises in estimation. How many times

can a small cup be filled from the big bucket? Or how many ice cream cups make up a given tin? Such exercise helps form early ideas about capacity. Terms like more and less begin to have meaning. The process of filling or emptying a larger container using a small one leads to counting. It can be extended to exercises in repeated addition (multiplication) or repeated subtraction (division).

A simple balance can be improvised and used to compare the weights of containers filled with sand. If the containers are identical, do they always balance when full of sand? Is it possible to pack in more sand? Exercises in weighing give rise to concepts of heavy and light. The pulley will also help in this respect.

Concepts of time may be introduced in terms of how long it takes for sand to empty out of a tin with a small hole in its base. A sand clock may be improvised from a cone of paper resting on the neck of a bottle.

Objects used as moulds may be of different sizes—large or small. Perhaps they can even be arranged in order of size.

Identification of objects hidden under the sand, sorting out of tools or other objects into sets are some other possible exercises.

The teacher's role is important. Watching individual children at work will give insights into

their personalities. Individual work or play can gradually be steered into working in small groups—an early lesson in cooperation. The teacher needs to be on the lookout for violation of safety rules, for intervening in disagreements between children and to help those who cannot finish their allotted tasks.

Apart from all these, the most important job of the teacher is to talk to the children as they play, explore, experiment and react. This interaction between the teacher and the children is what leads each activity towards its logical conclusion, namely the formation of a concept or the learning of new vocabulary and skills. The list below gives a number of new words which may be introduced into the mathematical vocabulary of the children:

many	few	big	small
more	less	heavy	light
back	front	near	far
side		here	there
inside	outside	forwards	backwards
under	over	high	low
round	flat	up	down
another	one	fast	slow
balance		start	stop
weight			
same	different		

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DO YOU KNOW ABOUT (Continued from page 4)

* The Forum for Teachers of English Language and Literature (FORTELL) and the British Council Division have invited jargon-free, non-technical style papers of two to three thousand words length on any aspect of the teaching of English in India. Sixteen prizes will be awarded. The last date is October 31, 1993. Further details can be had from Dr. Naresh Jain, BB/49-C Janakpuri, New Delhi 110 058, Telephone: 550 0179.

* Naina's Village: The first of a series of environmental story books for children: 32 pages, soft bound, illustrated with activity sheet. Price: Rs. 15/-. Contact Centre for Science and Environment, F-6 Kailash Colony, New Delhi 110 048. Telephone: 643 3394, 647 6401.

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knives, let them use the sprouts to make for themselves a nutritious and tasty salad. Help out by providing chopped onions, halved lemons etc.

Another interesting cooking demonstration could involve popping corn. Find out how puffed rice and wheat are made. What dishes can be made from them?

If possible obtain an old-fashioned grinding stone and let the children take turns to grind cereals into flour. Remember to clean, wash and sun dry the cereal first (washing removes pesticide residues—an opportunity to talk about farming and storage methods). If the stone is not available, a small dry grinder might help. Otherwise try and arrange a trip to a nearby flourmill (*chakki*). Thereafter, try making biscuits with different flours—seek help from your domestic science laboratory. Try a taste

test—can you tell the differences?

For some of the children, eating porridge made of oats or ground wheat (*dalia*) may be new experience. What are the differences between *rava/sonji*, *malda* and *atta*? Which kinds are used for bread? How is white bread different from brown or wholemeal bread? Which kind is used for chapattis? puris? What can be made from *sooji*? Lots of questions to ask parents and other grown-ups at home. The information so obtained should be recorded by the child in simple sentences and shared with others. If the children are ready for it, this may even be an opportunity for writing down precise recipes with the help of parents and then trying them out in class. The need to measure out quantities, either in standard units or in spoonfuls etc. will be brought home. Cooking lessons can lead to discussions about food values a balanced diet and food hygiene.

Have fun going to seed!

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often found in architects' offices. This will help them understand why the 'plan' of a house or a block of flats often consists of only a flat rectangle.

ix) Use the OHP again. With toys, create a small neighbourhood. There will be trees, houses, roads, cars, post boxes etc. How do they look? Sketch the plan of the area.

x) If by now you wish to introduce the idea of drawing to scale, place these objects—**not too many of them**—on a squared transparency. Provide children with squared paper having an identical number of squares in each direction. This will help them position the objects correctly on their plan.

Only after a great deal of practice, should

the children attempt to draw using any scale other than 1:1. Even the later exercises should be planned so that simple scales like 1:2 or 1:5 work out easily.

xi) Use toy animals spread out over marked areas, more in some and less in others, to introduce the idea of distribution, patterns etc.

The use of all these objects will obviously bring in the idea of using 'symbols' and hence the need to explain those symbols in a 'key'.

xii) A final idea—this time for older students who have difficulty grasping the idea of contours. Create a contour map on the stage of the OHP using clear plastic or perspex strips of varying heights. Seen as a shadow the corresponding contour map will appear on the screen. By moving the strips into different arrangements the contour map can be changed as desired.